(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification[7]:   H02M 3/00

(21) International Application Number:
PCT/IB2003/002937

(22) International Filing Date: 27 June 2003 (27.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02077713.2   8 July 2002 (08.07.2002)   EP

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(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
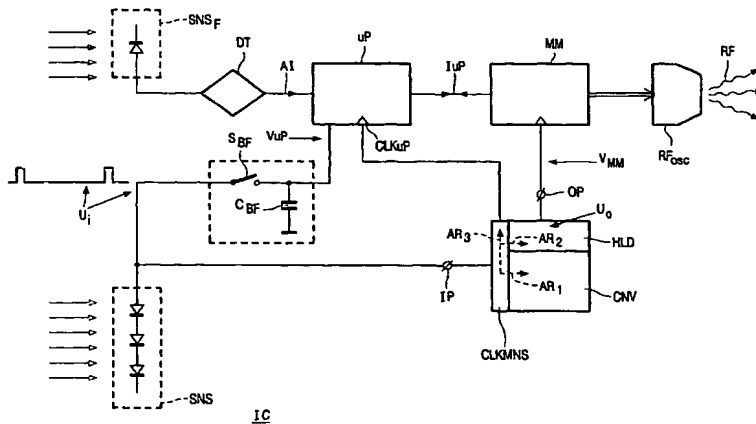
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(54) Title: MEDIUM FOR STORING AND READING INFORMATION, AND DEVICE FOR STORING AND READING OF INFORMATION ON AND FROM THE MEDIUM

(57) Abstract: An integrated circuit (IC) is attached to a disc for writing/reading information. The disc may be used, for example, in an apparatus such as a CD-player. The IC comprises: a light sensor (SNS), a further light sensor (SNS$_F$), detection means (DT) (which are optional), a microprocessor (uP), non-volatile memory means (MM) such as an EEPROM, an RF-oscillator (RF$_{osc}$), voltage conversion means (CNV), and a standby circuit (SB). The first light sensor (SNS) comprises several photodiodes and has the purpose of supplying the microprocessor (uP) and the EEPROM with supply voltages VuP and V$_{MM}$, respectively. The further light sensor (SNS$_F$) preferably has only one photodiode (for speed reasons) and has the purpose of delivering access information (IA) to the microprocessor (uP). The voltage conversion means (CNV) comprises, for example, a cascade of charge pumps. A conventional charge pump does not function properly if the input voltage (U$_i$) is only periodically present during relatively short time periods. Therefore an inventive measure is applied to the voltage conversion means (CNV) which is briefly stated as follows: during the presence of the input voltage (U$_i$), the charge pumps functions normally, but in the absence of the input voltage (U$_i$) the switches in the charge pumps are kept in a holding state. The supply voltage (V$_{MM}$) is only delivered by the conversion means (CNV) when enough energy has been stored in the capacitors of the charge pumps. The clock signal of the microprocessor (uP) is held also when the input voltage (U$_i$) is absent, and a switch (S$_{BF}$) of the standby circuit (SB) is non-conducting. Therefore, the supply voltage V$_{uP}$ remains present (because of the presence of a buffer capacitor (C$_{BF}$)) in the absence of the input voltage (U$_i$). The IC may be used, for example, as a copyright protection system in a CD player, where access information (AI) is processed by the microprocessor (uP) and stored in the memory means (MM). A so called "Key" may be stored in the memory means (MM). With this key, together with the access information (AI), an RF-signal can be sent back by the RF-oscillator to the CD-player. The CD-player can then decide whether, for example, a copy of the CD may be made.